

Proposal Review Responses

CALFED Proposal #203: Improved Fish Screen Design and Operation for Native Sacramento-San Joaquin Watershed Fishes

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This document is our "comment period" response to the CALFED Ecosystem Restoration Program proposal reviews of our proposal entitled "Improved Fish Screen Design and Operation for Native Sacramento-San Joaquin Watershed Fishes" (CALFED proposal #203). It is organized with respect to the specific reviews and comments, in the order they were reported on the CALFED Website. After examining the reviews, we have two broad concerns regarding their assessment of our proposal

First, with one notable exception, each of the various reviews was thoughtful, useful, and overwhelmingly positive, particularly with respect to the quality and value of the proposed work for the CALFED Bay-Delta Ecosystem Restoration Program and its goals. However, it is our feeling that errors that occurred, either in the electronic transmission of figures or in the mistaken impressions of the reviewers (i.e., that a previous version of this proposal had been submitted to IEP, or that research findings were infrequently or inadequately conveyed to the engineers and biologists who are responsible for fish screen design in California) adversely biased some of the reviews. The one truly negative review (Scientific Reviewer #1) contained statements of such an unprofessional tone that this review was without sufficient merit and, in our opinion, should not have been considered by the selection panel in their final review of this proposal.

Second, a number of the review panels expressed concern that insufficient detail was provided in the proposal for them to adequately or accurately assess and review the proposed research. The Fish Treadmill Project is a large-scale and complex, laboratory-based applied research program with the objective of developing quantitative and scientifically-based information useful for the development and refinement of fish screen flow, design and operational criteria. Over the past several years, the project has generated large amounts of detailed background documentation (e.g., Biological Monitoring and Research Plan, provided as Appendix II with the proposal), results (listed as publications and presentations in Appendix III), and suggested applications of the results and research findings for fish screen flow, design, and operational criteria (an example, for juvenile chinook salmon, was provided as Appendix IV). This important information was provided as appendices, rather than incorporated into the body of the proposal, because of the page limitations described in the CALFED Proposal Solicitation Package and as per the suggestion to include appendices in the proposal Format and Content section of the PSP. Based on the comments of one reviewer, who "did not feel obliged to consult that material in order to form a justified opinion about this work", we are concerned that reviewers may have been improperly instructed regarding the required proposal format and preparation instructions and that their incomplete understanding of the proposed work adversely biased their reviews.

Research Restoration Technical Panel Review

1. Due to the non-transmission of Figure 1, which diagramed the conceptual model underlying the ongoing Fish Treadmill research program, we understand the review panel's concerns that the hypotheses could have been more clearly stated. This figure included specific hypothesized linkages between environmental and/or biological factors and the fish responses that have been or were proposed for experimental evaluation using the Fish Treadmill. However, most of these hypotheses were also briefly described in the proposal text (Justification and Approach sections) and in Table 1 (which did transmit correctly). For reference, the conceptual model figure (Figure 1 of the proposal) is provided on the following page.

2. As stated in the proposal, "the experimental design, methods, and data evaluation approach are complicated with many experimental variables and many measurements made during the each experiment." Therefore, because of the required proposal page limit (20 pages maximum, p. 59 of PSP, Proposal Format and Content), we presented this information in a condensed tabular form (Tables 2, 3). More detailed information was provided in Appendix II (pp. 26-44, 18 pages in all), as noted in the body of the proposal. Therefore it is surprising that the panel referred to a "superior" proposal that used "19 pages to provide the appropriate level of detail and justification," and that such detail provided in an appendix "was not an acceptable substitute." We felt that a statement regarding the rigorous review of the Fish Treadmill methods would be helpful in assessing the experimental design and quality control inherent in our studies, but we regret that this inclusion was apparently misinterpreted by the review panel.

3. We agree with the panel about the importance of providing results to "the engineers designing the screens and the fisheries agencies determining the criteria." We suspect that the panel is misinformed about the level of effort directed by the Fish Treadmill investigators towards providing results and research findings to the relevant personnel. The proposal's appendices (I, III) include detailed lists of publications and presentations (also available on our website [<http://wfcb.ucdavis.edu/www/Faculty/Joel/treadmill/index.htm>]) reporting Fish Treadmill results. In addition, as noted in the proposal, Fish Treadmill personnel regularly meet with the IEP Central Valley Fish Facilities Review Team, a group comprised of the engineers and fisheries agency personnel charged with development and oversight of fish screens' design and operational criteria. Finally, Appendix IV of the proposal provided an example of the types of results and research findings that have already been provided to fish screen engineers and fisheries agencies personnel that describe applications of the Fish Treadmill results for the purpose of developing or refining fish screen design and operational criteria.

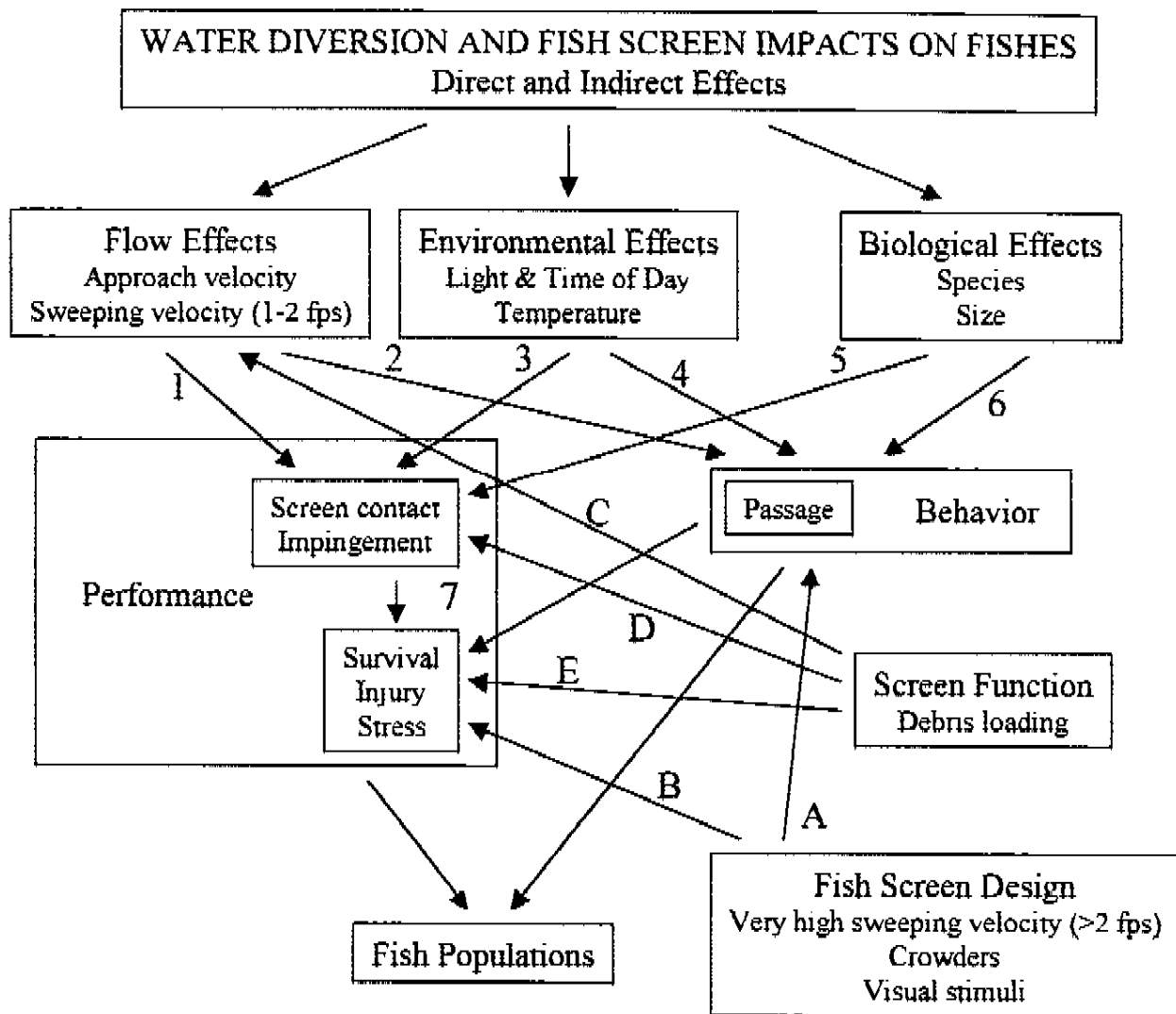


Figure 1. Conceptual model identifying relationships among those factors and mechanisms hypothesized to influence near-field water diversion and fish screen impacts on fish populations. See Table 1 and Justification section (in original proposal) for further description of linkages identified by numbers or letters.

To demonstrate our commitment to continue dissemination of Fish Treadmill and Delta fishes research results, the following presentations were made at the recent (April, 2002) Symposium and Annual Meeting of the California-Nevada Chapter of the American Fisheries Society (Tahoe City):

Swanson, C., P. S. Young, S. N. Chun, T. Chen, T. MacColl, L. Kanemoto, T. Mussen, R. Kussow, and J. J. Cech, Jr. Close Encounters with a fish screen II: The emerging delta smelt story. Symposium and 36th Annual Meeting of the American Fisheries Society California-Nevada Chapter. Tahoe City, April 18-20, 2002

Young, P.S., C. Swanson, S. Chun, T. Chen, T. MacColl, L. Kanemoto, T. Mussen, R. Kussow, and J. J. Cech, Jr. Delta Smelt and Splittail in Double Jeopardy: Performance in Two-Screen Tests. Symposium and 36th Annual Meeting of the American Fisheries Society California-Nevada Chapter. Tahoe City, April 18-20, 2002

Chun, S. N., P. S. Young, and J.J. Cech, Jr. "Hitchhiking" delta smelt: how stressful is a short truck ride? Symposium and 36th Annual Meeting of the American Fisheries Society California-Nevada Chapter. Tahoe City, April 18-20, 2002.)

4. The salaries and benefits are figured from regular UC Davis rates. The contributions of many undergraduate students (both those working for student salaries and those earning internship credit hours) significantly reduce the costs of these experiments (i.e., compared with career salaries of regular biologists and engineers). Each experiment involves at least 6 people (2 engineers, 4 biologists) for approximately 3 hours time, and hundreds of experiments need to be done to understand the roles of seasonal temperatures, diel changes in light intensity (lighted during daytime experiments, dark during night experiments), fish life history stage (2 body sizes), and the relative and combined effects of approach and sweeping velocities (10 velocity combinations), in the 6+ species of native Delta fishes, with sufficient replication (usually 3 replicates of each combination of variables) for statistical rigor. As many as 8 experiments/wk are conducted, underlining the need for multiple part-time, as well as full-time, participants. Further, the water quality tests and Fish Treadmill maintenance (engineers) and the post-experimental fish inspections and data analyses (including motion analysis of video tapes) occupy many hours of the full-time, part-time, and student participants. The number of hours paid to senior level staff on the project (Co-P.I. Prof. M.L. Kavvas) only amounts to 2 months per year. The bottom line is that the Fish Treadmill project produces scientifically based results that are immediately useful to agency biologists and engineers charged with designing and operating fish screens, which will protect our native fishes (a few of which are listed as threatened or endangered).

5. The "low" Bay Regional Review could be expected because of the minimal fish screening requirements of this region, compared to the others in the watershed (see more detailed response, below). The comment from the Delta Regional panel that the proposal had been submitted to the IEP is incorrect; the proposal was submitted only to CALFED. Because we believe that the results will be useful to engineers to design better fish screens, we concur with the opinions of the external reviewer who rated the proposal excellent.

6. Recent meetings have clarified the working relationships among fiscal and accounting personnel at UC Davis and cooperating agencies, regarding CALFED grants. The resulting, renewed understanding should minimize future difficulties concerning fiscal documentation.

Bay Regional Review

Although the Bay Region overall ranking of our proposal was low, reviewers acknowledged the P.I.'s excellent qualifications, extensive linkages to multiple CALFED goals and provisions of additional information for development and management of fish passage facilities (especially with respect to debris). Their low ranking was "relative to other proposals with more direct connectivity to the San Pablo/Suisun region and not an indication of the lack of relevance, need, or scientific quality of this effort to other regions."

Delta Regional Review

The Delta Region overall ranking of our proposal was medium, apparently based in part on concerns regarding the applicability of the research for fish screen design and operation. Specific examples of applications of Fish Treadmill results were included Appendix IV (Fish Treadmill-Developed Fish Screen Criteria for Native Sacramento-San Joaquin Watershed Fishes: Recommendations for Fish Screen Flow and Operational Criteria to Improve Protection of Chinook Salmon). This information was included as an appendix, rather than in the main body of the proposal, in order to satisfy the CALFED-required page limitations for the proposal.

1. In their assessment of the feasibility for the program, the reviewers included two significant errors in their review:

- a) Collection of delta smelt and splittail for use in Fish Treadmill program is not "dependent on the IEP sampling program" The UC Davis Fish Treadmill researchers have (and have had for the past year) their own collecting permit for delta smelt and splittail, granted by the USFWS. These collections are made in cooperation with our collaborators in the proposal, CDFG.
- b) This proposal was not submitted to the IEP, only to CALFED.

We agree with the reviewers that "this project builds on previous research and attempts to further knowledge of fish screen design. This work is being proposed by highly qualified researchers with previous experience and significant publication records."

2. We also agree with these reviewers that the "project addresses multi-regional priority 6 (Ensure at-risk species' recovery by developing conceptual understanding and models that cross regions) and Delta priority 7 (Protect at-risk species using water management + regulatory options). This research will assist in estimating the impacts of fish screens on several species of fish at a multi-regional level, helping fill the gaps for models. In addition, this research will assist with the construction of future screen projects." Regarding CVPIA priorities, reviewers stated that "this research will address priorities 3402a, b, and c of the Central Valley Project Improvement Act. Because this is research, it takes a slightly lower priority than work that can be immediately implemented, however, the potentially far-reaching benefits in the future should not be overlooked. Also relates to 3406(b)(I) which authorizes the AFRP to make all reasonable efforts to double anadromous fish by 2002."

3. We also agree with the reviewers' comments that "this study builds upon research done by Department of Fish and Game in the early 1980s. Results of previously funded CALFED and CVPIA AFSP work by these investigators have been used to help guide the development and design of the experimental Tracy Fish Test Facility. In addition, these studies will assist in further refinements to the CVP and SWP pumping plants as well as the development of the proposed Through-Delta Fish Facility. The significant publication record and presentation history of this work makes it available to many parties."

4. We also agree with the reviewers' comments that "the principal investigators of this work have done an excellent job publishing and presenting their results in the past, having published dozens of articles in a variety of peer-reviewed and non-peer reviewed journals and made presentations at the American Fisheries Society meetings, IEP annual meetings, etc. They have been integrally involved with the Interagency Ecological Study Program (Central Valley Fish Facilities Review Team, Delta Smelt Project)."

These reviewers conclude that this is an "excellent proposal including quality control and quality assurance protocols as well as detailed data analysis description. This is the only project of its kind and has been very academic with a significant publication record. This information must remain usable by management agencies for the benefit of the Sacramento-San Joaquin Estuary."

Finally, the "concerns from the panel about the design of the treadmill, such as the location of the cement wall" are unfounded, because there are no cement walls in the Fish Treadmill.

San Joaquin Regional Review

This regional review ranked our proposal as "high." These reviewers stated that "the project should receive continual funding and probably not be required to go through the PSP process. Considering the large amounts of money being spent or planned to be spent on screens, it is imperative to determine the most effective design." The reviewers' concern about data getting to engineers and those that are involved in screen design and placement is addressed above.

1. These reviewers stated that "since this is a continuation and refinement of previous research using the Treadmill at UC Davis, there don't appear to be any adverse local constraints to this project. The Fish Treadmill project is an ongoing, multi-agency research program that has been in effect for several years. The treadmill has been built and functioning well for several years. Collection and holding techniques of native fishes have been well established by the research team, and experimental protocols also established."

2. These reviewers stated that "this project will continue and enhance ongoing fish screen projects. As the only operational experimental platform for fish screen studies, the treadmill studies are identified by CALFED, CVPIA Anadromous Fish Screen Program (AFSP) and CVFFRT as essential to inform and guide CALFED-sponsored retrofits and replacements of existing fish screens at CVP and SWP, as well as other fish screen projects." Further, they state that "results of this project are particularly relevant to salmonid fishes that utilize wide ranges of habitat within the watershed at different life stages (i.e., differences in the responses of parr and smolts to screened water diversions)." "These studies directly address downstream passage past screened water diversions. Also, results can address the effectiveness of proposed screening for fish protection." "This project is the only experimental platform for fish screen studies." "The project will provide information on life histories, needs and responses to restoration (i.e., fish

screens) for steelhead, chinook salmon, delta smelt, splittail, and sturgeon." "The project objective is to provide scientifically based comprehensive information to improve design and operation of screened water diversions in the delta."

3. Regarding links with other restoration activities in the region, the reviewers stated that "the results of the proposed project, when applied to improving fish screen designs, will reduce the negative impacts of water diversions. It will continue and expand on a research program previously supported by DWR and USBR to design, build and conduct preliminary studies in the treadmill, as well as previous CALFED funding for further studies utilizing the treadmill." They further state that "results have been identified as critical to inform further development of planned improvements to fish screens and facilities at CVP and SWP, as well as CALFED's proposed Through-Delta Facility. "The proposed program will examine 1) alternative approaches to facilitate fish passage, and 2) the effects of suboptimal fish screen flow conditions related to debris, a serious concern in both riverine and Delta regions on fish performance and behavior."

4. These reviewers also stated that "the Fish Treadmill Project is a continuing project based at UC Davis utilizing university faculty and staff as well as Stockton-based DFG personnel. All required notifications and approvals to UC Davis, local governments, landowners, environmental groups, and other interested parties have been in place from previous studies. Outreach is through periodic workshops, workgroup meetings, and scientific meetings, IEP Newsletter articles, journal articles in scientific and technical press. Joe Cech's group has always articulated their research in many different forums."

These reviewers concluded that "the Treadmill Project has been very useful in determining responses of different fish species to varying flows and approach velocities at a screen. Continuing this research to gain data necessary to evaluate and improve aspects of fish screen design and operations is critical to successfully implementing changes in CVP and SWP screens as well as the proposed Through-Delta Facility. CALFED has a large number of proposals regarding the placement of fish screens on diversions, most of which have inadequate justification or monitoring. This facility is the only facility that has the capability to effectively experiment with different designs under varying conditions (light, temps, flows) with a wide range of species."

These reviewers stated that "more outreach to engineers" would be desirable (an issue addressed in our comments above). However, they recognized that "that Joe Cech and his group do a splendid job at publishing and presenting their results from these important studies."

Sacramento Regional Review

These reviewers ranked the proposal as "medium," but "felt this is a continuation of important work which is critical to fish screen implementation". Although there were concerns that the results could be more directly applicable to fish screen design, the frequent meetings and presentations of past research results have always tried to focus future efforts in that direction (and see above comments regarding this issue and Appendix IV included in the proposal). Another concern concerning the timeliness of the past results is well taken. The Fish Treadmill research team has always tried to bring research results to the biologists and engineers who need them, as soon as possible. However, the small fish used in these studies are often only available, (i.e., due to life history constraint of seasonal spawning) at certain times of year. The Fish Treadmill experiments (explained in monthly reports to our quality control officer, quarterly reports to our project manager, and to a broad spectrum of interested biologists and engineers)

have been carefully planned to minimize "down time" due to unavailability of experimental fish.

1. These reviewers stated that the "proposal is follow-on to previous CALFED funded study. Study results have identified issues surrounding varying species-specific responses to passing and through screen velocities. These responses will be investigated in greater detail to include debris loading and varying physical parameters including temp. etc." The reviewers allude to a "possible weakness" regarding "the size of test fish which for salmonids are >6 cm." They state that the "research should either focus upon weakest stage or test all size stages." In fact, as described in the proposal (Table 2) and Appendix II, we do both of these (i.e., experimenting on fishes [including the salmonids chinook salmon and steelhead] of 4-6 cm and 6-8 cm total length). The reason that the results have taken some time to reach those who need them is because we include so many variables i.e., two life stages of small fish, two (seasonal) temperatures, two (diel) light intensities, and ten combinations of approach and sweeping velocity). According to the agency (and their consultant) biologists and fish screen engineers, these were the variables of particular interest, regarding fish screen design and operation. Recent meetings with these biologists and engineers have impressed the importance of moving fish past the screens faster and examining the effects of debris and resulting "hot spots" on fish swimming performance and behavior. These needs shaped the current proposal objectives (see proposal pp. 4-5).

2. These reviewers stated that the "proposal is directly applicable to Restoration Priorities for the Sacramento Region #6, 'Continue major fish screen projects and conduct studies to improve knowledge of implications of fish screens for fish populations', and Restoration Priorities for Multi-Region Bay-Delta Areas #6, Ensure recovery of at-risk species by developing conceptual understanding and models of processes that cross multiple regions." "Proposal is follow-on to previously funded CALFED proposal investigating various species response to fish screens. This is extremely important to entire CALFED project area due to the numbers of diversions. Previous research has focused mainly on salmonids, which current studies are revealing may not be representative of other native species."

3. These reviewers stated that the "project is closely coordinated with resource responsible agencies, and is critical to fish screen implementation throughout the entire Central Valley. The numbers of unscreened diversions and ultimate cost are of major concern. Additionally, most current fish screen design is based upon salmonid criteria and in general has not taken into account other native species. This proposal is critical to addressing these concerns." The reviewers criticized the proposal for not emphasizing "the most sensitive stages" of the fishes tested. The proposed studies use the smallest, weakest swimming life stages consistent with the size of screen planned (in most of the forums that we have attended) for Delta screening operations (3/32" or 2.4 mm gap between adjacent wedgewires). Other studies could be designed using finer-mesh screens (e.g., suitable for more up-river applications) in another Fish Treadmill proposal, although the demand for such data has not been voiced as consistently as that for data on the 4-6 cm (total length) and 6-8 cm life stages.

4. These reviewers stated that the "project is closely coordinated with responsible resource agencies, which have in turn coordinated with local people and institutions."

External Scientific: #1

The two external scientific reviewers have opposite opinions about our proposal. Reviewer #1 apparently has difficulty believing that the proposed research can be done, despite the "attachment of a previously produced progress report." This reviewer's suggestion that "Cech should take a

year off' would, unfortunately, lay off the paid researchers, stopping the project. Without the science-based data concerning techniques to increase the passage of Delta fishes past fish screens, and concerning effects of debris and adjacent "hot spots," on fish swimming performance and behavior, decisions about proposed fish screens will be based on data on other species from other habitats. A one-year stoppage would set the project back for >1 year, due to the necessary rehiring and retraining of a new team of biologists and engineers. Reviewer #1 does not think that this is a "first class proposal," in contrast to Reviewer #2 (see below).

1. While Reviewer #1 correctly stated that the proposed research is a continuation of ongoing Fish Treadmill studies, he/she apparently felt that the "goals, objectives and hypotheses of the research proposed" were insufficiently explained. However, this reviewer stated that he/she "did not feel obliged to consult" the supplemental material provided and clearly referenced in the proposal (see additional, discussion of this issue, above).

2. Reviewer #1 stated that "some justification for the proposed research was presented and it does seem logical that operation of diversion screens would not be simultaneously good for all species at all locations. Operation and design of fish screens may logically be species-dependent." This is precisely why the Fish Treadmill research includes so many small native species (including several on the threatened and endangered lists).

3. Reviewer #1 guessed "that use of Cech's treadmills is the correct approach to these problems," but the reviewer was concerned that no alternative approaches were presented. As the proposal notes, the Fish Treadmill is currently the only apparatus available for this applied research. Unfortunately, the "blank page" conceptual model made it "impossible to conclude that the approach to be used is well designed, etc." The missing conceptual model, which apparently did not transmit via the electronic proposal submission system, really hurt us on this review. However, we were never informed that our proposal was incomplete. Indeed, we received all "green bars" when we submitted the proposal, indicating to us that it was complete. Apparently no one checked the hard or pdf copies sent to the reviewers, to tell us that there was a blank page.

4. Reviewer #1 stated that "based on previous development and successful use of the treadmill facilities one might reasonably guess that more successful studies could be carried out for a large number (perhaps infinite?) of fish species." To us, the inclusion of the parenthetical reference to an "infinite" number of species, represents a flippant remark of someone who does not understand the complexity of the Delta ecosystem. Further, Reviewer #1's remark about "attached project status reports" seems to contradict the reviewer's opinion about the "success of this project," based not on data ("certain measurements are taken over the course of the treadmill experiments") but on "useful inferences that might be drawn from the experiments." In fact, one must have the data available to make the useful inferences. Actually, an example of such inferences based on Fish Treadmill data was provided in Appendix IV of the proposal.

5 & 6. Reviewer #1 may be unfamiliar with the research process, regarding written products and the explanation and dissemination of these products as performance measures ("quarterly reports, technical reports, presentations at meetings, etc.")

7. Reviewer #1 stated that the "project personnel appear well qualified to carry out studies." The inclusion of the flippant remark about "millions of useful (?) measurements" raises doubts in our

mind about the validity of this review

8. Reviewer #1's remark about the "hugely expensive" budget raises doubts about the reviewer's comprehension of the study's complexity. The budget figures are explained above.

External Scientific: #2

In marked contrast to Reviewer #1, Reviewer #2 rated the project as "excellent." Despite "minor concerns about some of the costs" (addressed above), Reviewer #2 stated that "this project provides basic, highly important information needed by those individuals trying to build screens that provide protection for listed fish species while at the same time providing needed water for irrigation, industrial and municipal uses. Nowhere else in the realm of fisheries restoration work do you find the win-win situation better than the construction of fish screening facilities, and this project provides some of the basic information needed to carry on that work."

1. Reviewer #2 stated that "the goals, objectives and hypotheses are clearly stated and internally consistent." Further, the reviewer stated that although the title was "somewhat misleading," the project is "directed at discovering appropriate flow conditions for Delta fishes encountering a screen facility." The title "does not distract from the timelines and importance of the type of research being proposed. For agencies, water users and individuals attempting to design fish screening facilities there is minimal research available on appropriate flow conditions and design criteria for even salmonid species let alone other non-game fishes."

2. Reviewer #2 stated that "this study is justified relative to the existing knowledge on fish screen flow conditions. Especially for species other than salmonids there is very little knowledge about what types of flow conditions will safely pass individual fish past a water diversion project. As the fish treadmill project has shown in previous studies, it is imperative to study the behavior of each fish species that are to be protected at water diversions, not just sustained and burst speed capabilities of the species since behavior of the species when encountering a screen can be very different for each species regardless of swimming abilities of the species. This research is justified in that those attempting to design fish protection facilities currently need the knowledge that this project will produce."

3. Reviewer #2 stated that "as the applicants have shown in previous work, the approach is appropriate and well designed for meeting the objectives of the project. This work will provide highly needed basic behavioral information for Delta fishes that is currently needed by decision-makers. This facility is currently the only facility that can provide this type of information, and it currently exists and therefore would not need to incur substantial development costs." Reviewer #2 wanted "a link between the applicants and the fisheries agencies that are responsible for determining what criteria a screening facility will need to comply with." The many links are explained in the proposal (Appendices I, III).

4. Reviewer #2 believed "that the approach is fully documented and technically feasible as has been shown by this facility previously. The scale of the project is consistent with the objectives. This is a very large laboratory experiment and the best test facility anywhere for conducting this type of research. The applicants have assembled the needed equipment and personnel to conduct this research and have proven their effectiveness in measuring these type of fish behavior parameters in past work."

5. Reviewer #2 stated that "the project is very specific on the parameters that it intends to test, and as indicated previously the project has the performance history to show that there is a high degree of likelihood that it will be able to successfully meet the goals and objectives as outlined in the proposal."

6. Reviewer #2 states that "the products of this project are the information developed and the reports generated that summarize this information. The project has done a good job in the past at reporting their findings in report and presentation form. This information is very important outside the Northern California area as well, and while outside the scope of the CalFed Program it is a benefit that this information is being shared widely"

7. Reviewer #2 stated that "the applicants have a proven track record of performing this type of research as indicated by the appendices that are attached to the proposal. They have put together a highly qualified team of experts to perform this research. The infrastructure (the treadmill) has been constructed, and successfully used on this type of research previously. The fact that the infrastructure has already been constructed is what makes this project feasible."

8. Reviewer #2 mentioned a concern about "the high cost of the project" (explained, above), and the reviewer correctly assumes that "the very high (48.5%) University indirect costs are probably not something that this project has any control over." In fact, two budgets were submitted, and one of these used the State (10%) overhead rate. The overhead rates of private (non-State) organizations often exceed 60%. Further, the graduate student tuition remissions are included because we train graduate students (as scientists of the future). UC Davis mandates that these fee remissions be included in our research proposals. "Hiring outside assistants" at UC Davis salary and benefit rates would cost more money. As stated above, much money is actually saved by using (paid and unpaid) student assistants

Overall, Reviewer #2 stated that "this project will provide very important information to fisheries agencies and water users wishing to design fish protection facilities at area water diversions. This is the only facility of its kind doing this type of research and it is important for this work to continue. I would like to see this type of research extended for other types of screen facilities, especially horizontal plate screens. The information obtained by this work will be very applicable to current work being undertaken to screen irrigation diversions in the Delta and Sacramento and San Joaquin Rivers"

Prior Performance/Next Phase Funding: #1

We would be pleased to continue our Fish Treadmill research activities "contingent on the findings and schedules of deliverables of the current Cooperative Agreement for \$1,278,000 from the US Fish and Wildlife Service through 12/31/02 to complete ongoing biological experiments, fish screen research, and accompanying reports" The proposed research would start when the current funding ends (and reports are submitted)

Prior Performance/Next Phase Funding: #2

As explained above, the fiscal and accounting problems associated with The Office of Vice Chancellor for Research at UC Davis have been addressed and no further difficulties, along these lines, are anticipated.

This reviewer states that "the difficulties expressed above are limited to UC Davis campus only. The Principal Investigators, Joe Cech, and other project researchers have been very professional and effective in meeting the goals of the project."

Prior Performance/Next Phase Funding: #3

This reviewer states that "the projects listed are described accurately, but applicant did not list Biological Assessment of Green Sturgeon in the Sacramento-San Joaquin Watershed. Contract # 11332-1-GOOS." As further explained by the reviewer, "This is a CVPW AFRP funded program." This reviewer concludes that "Dealing with the University is sometimes difficult, but Dr Cech communicates and manages well." The UC Davis-related problems have been addressed (see, above).

Environmental Compliance

As stated above, we possess all of the necessary permits (both State and federal) needed to conduct the proposed research

Budget

Apparently, there were no procedural problems with our proposed budget.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southwest Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

May 8, 2002 F/SWR4:RLW

Dan Ray
CALFED Bay-Delta Program
1416 Ninth St., Suite 630
Sacramento, California 95814

Dear Dan:

Dr. Joe Cech informed me of his intent to file an appeal over the outcome of the recent CalFed decision with respect to 2002 funding for the UC Davis Fish Treadmill research. I am writing to support the appeal because the fish treadmill research is a very valuable component of the Delta Fish Facilities development process.

The fish treadmill experiment has been a first rate scientific study up to this point. The researchers are very skilled and knowledgeable, and they have produced numerous publications and presentations. I am very impressed with the quality of their work products and its relevance to design requirements for Delta Fish Facilities.

The Fish Treadmill study is not yet complete, with some of the most important results yet to come. In particular, we anxiously await the results from Delta Smelt swimming experiments in nighttime conditions. These results will directly affect design decisions for the new Delta Fish Facilities.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Wantuck".

Richard L. Wantuck
Team Leader, NMFS Fisheries Engineering

